

REMARKS/ARGUMENTS

Reconsideration and withdrawal of the rejections of the application are respectfully requested in view of the amendments and remarks herewith, which place the application into condition for allowance. The present amendment is being made to facilitate prosecution of the application.

I. STATUS OF THE CLAIMS AND FORMAL MATTERS

Claims 20-23, which are hereby added, are pending in this application. Claims 20, 22, and 23 are independent. Claims 1-19 have been canceled without prejudice or disclaimer of subject matter.

No new matter has been introduced by this amendment. Support for this amendment is provided throughout the Specification. Changes to claims are not made for the purpose of patentability within the meaning of 35 U.S.C. §101, §102, §103, or §112. Rather, these changes are made simply for clarification and to round out the scope of protection to which the Applicant is entitled.

The Title and Abstract are amended herein.

II. REJECTIONS UNDER 35 U.S.C. §101

Claim 19, which was rejected under 35 U.S.C. §101 as allegedly directed to non-statutory subject matter, is canceled herein, obviating the rejection.

III. REJECTIONS UNDER 35 U.S.C. §103(a)

Previous claims 1, 2, 6-11, and 15-19 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over WO 002/07477 to Stone, et al. (hereinafter, merely “Stone”) in view of U.S. Patent No. 6,028,896 to Jang, et al. (hereinafter, merely “Jang”).

Previous claims 3-5 and 12-14 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Stone in view of Jang and further in view of U.S. Publication No. 2003/0053115 to Shoda, et al. (hereinafter, merely “Shoda”).

New claim 20 recites, *inter alia*:

“...selecting means for selecting between a first compression system, which conducts quantization with different quantization steps, and a second compression system having a compression factor and loss which are less than the compression factor and the loss of the first compression system, on the basis of a smaller code quantity of a selection unit of each system and outputting a selection signal;

switching means for switching between the code quantity of the first compression system and the code quantity of the second compression system to deliver the corresponding code quantity according to the said select signal outputted by the said selecting means; and

calculation processing means for:
adding, on an encoding system selection unit basis, the said code quantities according to the said switching means to thereby accumulate total code quantity of one equi-length unit; and

specifying a first total code quantity that is the minimum code quantity among total code quantities which exceed the target code quantity for every one of the quantization steps of the first encoding system, based on the said calculated total code quantity and the target total code quantity of one equi-length unit;

specifying a second total code quantity that is the maximum code quantity among total code quantities less than the target code quantity for every one of the quantization steps of the first encoding system, based on the said calculated total code quantity and the target total code quantity of one equi-length unit;

comparing, on an encoding system selection unit basis, said code quantity of second compression system with assigned code quantity which is calculated by using said first and second total code quantity through linear interpolation, and outputting select signal that selects encoding system with smaller code quantity; and

encoding means for encoding image signals using the compression system selected based on the assigned code quantity and the select signal outputted by said calculation processing means from one of;

a first path which uses first compression system with quantization step determined by said assigned code quantity; and

a second path which uses second compression system with less loss.”
(Emphasis added)

Applicant submits that the present application is generally related to a key technology of quantization and code quantity control encoding.

As understood by Applicant, the object in Stone is to select the encoding parameter **which results in the highest quality** among those that can satisfy the selected encoded data quantity. Stone is also directed to selecting an encoding parameter which results in the lowest data quantity among that can satisfy a data quantity.

Stone uses a selection processor of an encoding processor as shown in Figure 3. A metric processor generates a quality metric from a comparison between a decoded and an inverse quantized version of the data block and the original data block.

Applicant submits that such disclosure does not render claim 1 unpatentable. In the present application, no such decoding or comparison processing is needed.

The present invention is directed to selecting an encoding path by predetermined priority in a manner to satisfy the target code quantity thereby preventing deterioration of image quality.

Figure 3 of the present application has the technical effect of calculating $\text{assign}(k)$, and using the calculation, an encoder can be selected. $\text{Assign}(k)$ is computed by linear interpolation.

As understood by Applicant, Jang presents bit allocation from up to down or from whole to part. As shown in Jang starting at column 3, line 22, of Jang, an initial bit allocation for every group of pictures is determined, bits are then allocated for each picture of each group of pictures, bits are then allocation for every macroblock of every picture, and a quantizer step parameter is then determined based on the allocations and a quantizer step size is calculated proportional to that determination.

Jang teaches formulas 1-10 for the processing of the bit allocations. Formula 8 teaches that the accumulated amount of bits already allocated is subtracted from an accumulated amount of bits generated, which was determined before, and the result is to provide a parameter to further calculate the quantizer step.

The present application accumulates the selected smaller code quantity to produce a smaller total code quantity of a frame corresponding to every quantization step. Then an assigned code quantity is calculated and then a decision of what quantization step to use is made. Whereas the Jang process is top to bottom or whole to part, the present application is directed to a process which is bottom to top or part to whole.

Applicant submits that nothing has been found in Stone or Jang, taken alone or in combination, that would teach or suggest the above-identified features of claim 20.

Specifically, Applicant submits that Stone and Jang fail to teach or suggest selecting means for selecting between a first compression system, which conducts quantization with different quantization steps, and a second compression system having a compression factor

and loss which are less than the compression factor and the loss of the first compression system, on the basis of a smaller code quantity of a selection unit of each system and outputting a selection signal, switching means for switching between the code quantity of the first compression system and the code quantity of the second compression system to deliver the corresponding code quantity according to the said select signal outputted by the said selecting means, and calculation processing means for adding, on an encoding system selection unit basis, the said code quantities according to the said switching means to thereby accumulate total code quantity of one equi-length unit; and specifying a first total code quantity that is the minimum code quantity among total code quantities which exceed the target code quantity for every one of the quantization steps of the first encoding system, based on the said calculated total code quantity and the target total code quantity of one equi-length unit; specifying a second total code quantity that is the maximum code quantity among total code quantities less than the target code quantity for every one of the quantization steps of the first encoding system, based on the said calculated total code quantity and the target total code quantity of one equi-length unit; comparing, on an encoding system selection unit basis, said code quantity of second compression system with assigned code quantity which is calculated by using said first and second total code quantity through linear interpolation, and outputting select signal that selects encoding system with smaller code quantity; and encoding means for encoding image signals using the compression system selected based on the assigned code quantity and the select signal outputted by said calculation processing means from one of: a first path which uses first compression system with quantization step determined by said assigned code quantity; and a second path which uses second compression system with less loss, as recited in claim 20.

Therefore, Applicant submits that claim 20 is patentable.

For similar reasons as those described above, claims 22 and 23 are also patentable.

III. DEPENDENT CLAIMS

The other claims in this application are each dependent from one of the independent claims discussed above and are therefore believed patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

CONCLUSION


In the event the Examiner disagrees with any of statements appearing above with respect to the disclosure in the cited reference, it is respectfully requested that the Examiner specifically indicate those portions of the reference providing the basis for a contrary view.

In view of the foregoing amendments and remarks, it is believed that all of the claims in this application are patentable and Applicant respectfully requests early passage to issue of the present application.

Please charge any additional fees that may be needed, and credit any
overpayment, to our Deposit Account No. 50-0320.

Respectfully submitted,

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